

Remarks

Claims 1-21 and 25-42 remain in the application.

In view of the Preliminary Amendment, the Examiner will examine all claims despite the previously imposed restriction requirement.

The Examiner has objected to the drawings under 37 CFR 1.84(p)(4) because the reference numeral "20" is used to designate two distinct elements. The problem actually arises in the specification and is corrected by the amendment to page 2 and no amendment of the drawings is required.

The Examiner also objects to an editorial error on page 5 and requires an update on the status of the application on page 7. The error on page 5 has been corrected. The patent application has been abandoned but has been published. The description has been amended to include this information.

The Examiner objects to the claims on a number of specific points and offers suggestions for correcting the problems. The amendments substantially include the suggested amendments with the exception that a different line of Claim 32 has been amended. Claim 23 has also been amended to supply a missing conjunction and an editorial problem in Claim 37 has been corrected.

The Examiner has provisionally rejected Claims 1, 19, 20 for obviousness-type double patenting over Claims 27 and 41 of Serial No. 09/138,429. A Terminal Disclaimer is submitted herewith which should remove this rejection.

The Examiner has rejected Claim 25 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,519,373 to Miyata. This rejection is traversed. Claim 25 requires a vacuum-tight carrier encapsulating the magnets. In Miyata's primary embodiment of FIG. 2, the magnets 101, 109 are embedded in a non-magnetic retainer 120 in the form of a hollow cylinder (col. 3, ll. 35-

40). As illustrated, the retainer has two open ends. Miyata shows in FIG. 12 an additional feature of a rotation mechanism 126 (col. 6, l. 62), which is illustrated as having a generally cylindrical form with a closed upper end but an open lower end. Miyata does not mention the retainer or rotation mechanism as being vacuum tight. Nor do Miyata's open-ended structures conform to the normal meaning of encapsulating as enclosing in a capsule, which is a closed receptacle. Miyata's lack of a vacuum-tight carrier is understandable since, as illustrated in FIG. 4, he places his magnet ring 100 outside of the vacuum chamber. The Examiner states the because Miyata's ring is in a sputtering apparatus, it is enclosed in a vacuum tight carrier, see FIG. 3. The Examiner is misinterpreting FIG. 3 and ignoring FIG. 4. FIG. 3 shows the functional relationship of the magnet ring 100 and the pedestal 24 and target 28. It does not show the chamber wall or the relationship of the magnet ring 100 to the processing vacuum. FIG. 4, on the other hand, shows the magnet ring 100 outside of the vacuum chamber. There is no requirement for a vacuum-tight carrier in Miyata's apparatus and none is disclosed. The Examiner states that Miyata's abstract states that the dipole ring is used in a magnetron sputter reactor. However, Miyata's abstract does not state that the dipole ring is used inside the vacuum chamber of the magnetron sputter reactor. A sputter reactor includes the ancillary equipment exterior to the vacuum chamber including for example, the magnetron required for a magnetron sputter reactor which is nearly invariably placed outside the vacuum chamber in back of the target. Furthermore, even if Miyata could be interpreted as placing his magnet ring inside the vacuum chamber, the art is silent on whether a vacuum-tight carrier is then required. Accordingly, Claim 25 should be allowed.

The Examiner has rejected Claims 16 and 18 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,945,008 to Kusakibaru et al., hereafter Kusakibaru. This rejection is traversed. Admittedly Kusakibaru in FIGS. 9A and 9B shows a magnet ring 53 rotating about the object 50 being processed. Kusakibaru does not show that his magnet ring 53 is placed inside the vacuum chamber. Providing a rotation mechanism for a ring inside the chamber is a formidable engineering task and thus not the likely Kusakibaru design. Kusakabura places even the more

vacuum-tolerant magnetic coil 44 of FIGS. 8A and 8B outside of what appears to be the chamber wall 41. Kusakibaru's magnetic ring 64 of FIGS. 10A, 10B, 10C is apparently totally different from a magnetic dipole ring since it acts to exclude magnetic field from the object (col. 11, ll. 2-12). A permeable magnetic material provides such a function.

In regards to the floating pedestal of Claim 18, the Examiner states that substrate support of FIG. 9B is not shown as being biased and is therefore floating. This conclusion is unsupported and is in fact contrary to the biased pedestal electrode 26 of Kusakibaru's FIG. 2.

A dependent Claim 38 has been added requiring the magnetic dipole ring be stationary, contrary to Kusakibaru's magnetic ring.

The Examiner has rejected Claims 22-24 under 35 U.S.C. §103(a) as being obvious over Kusakibaru in view of U.S. Patent 5,666,247 to Schultz. It is believed that this rejection should be withdrawn because Kusakibaru uses a dipole ring for plasma control rather than for magnetic alignment and Schultz requires magnetic alignment for magnetic fields deposited on glass or NiFe bases appropriate for magnetic heads. Nonetheless, in view of the breadth of claims believed to be now allowable, these claims are canceled.

The Examiner has allowed Claim 9-15.

The Examiner indicates that Claims 2-8, 21, and 26-29 would be allowable if rewritten in independent form. Claim 1 is believed to be allowable so that its dependent claims should also be allowable. With the Terminal Disclaimer, parent Claim 19 should be allowable so that it is unnecessary to rewrite Claim 21 in independent form. Claim 26 has been rewritten in independent form.

The Examiner would also allow Claims 17 and 30-37 if other problems are corrected. Claim 17 is corrected and rewritten into independent form. The problems in Claims 30, 32, and 37 are believed to be corrected.

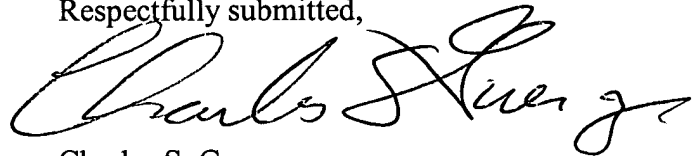
A new set of Claims 39-42 have been added emphasizing the high Curie temperature of the magnet ring.

A petition for a one-month extension of time is submitted herewith.

In view of the above amendments and remarks, reconsideration and allowance of all claims are respectfully requested. If the Examiner believes that a telephone interview would be helpful, he is invited to contact the undersigned attorney at the listed telephone number, which is on California time.

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Respectfully submitted,



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